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(71) Applicant
Wella Aktiengesellschaft, (FR Germany),
Berliner Alle 65, D-6100 Darmstadt, Federal Republic of Germany

(72) Inventor
Karlheinz Zulauf

(74) Agent and/or address for service
Marks & Clerk, 57—60 Lincoln's Inn Fields, London, WC2A 3LS

(54) Self-Closing Bottom Valve of a Receiving Container for Pasty or Fluid Substances

(57) The bottom valve 4 of a receiving container 1 is a sealing lip valve formed in one piece from an elastomer. Two lips 7 abut along a median plane. An annular sealing seat 8 is arranged below the lips 7 coaxial with the valve and cooperates with a dispensing container 2 as shown in Fig. 3.

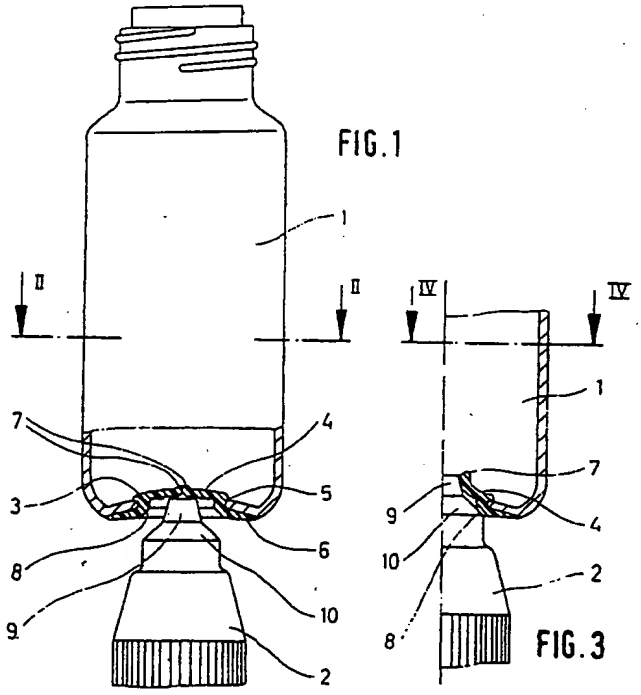

FIG.1

FIG.3

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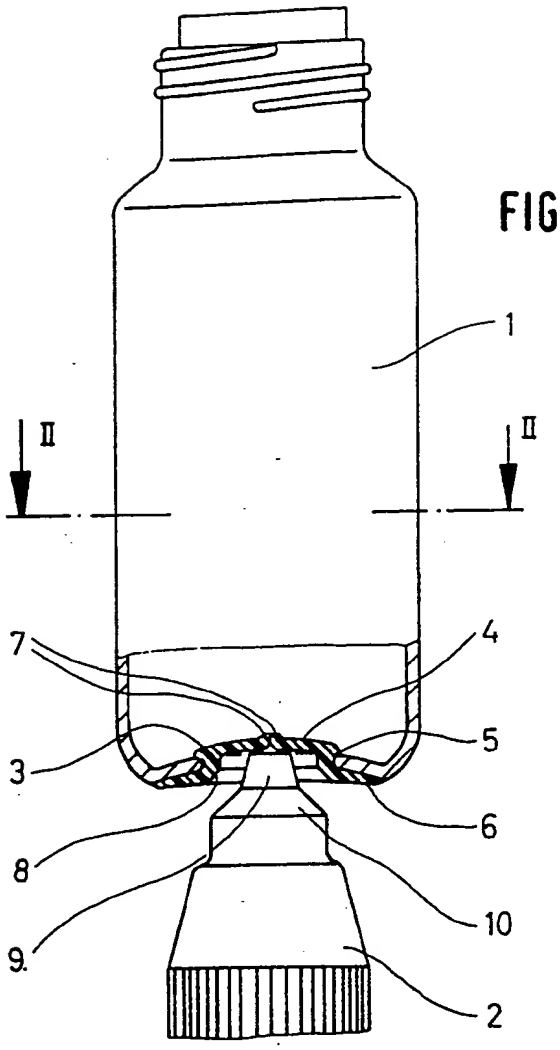

FIG. 1

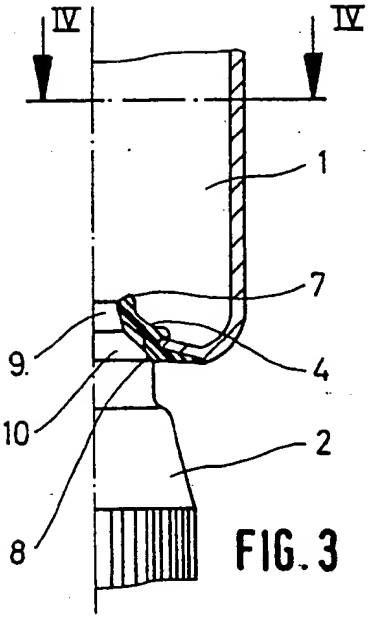

FIG. 3

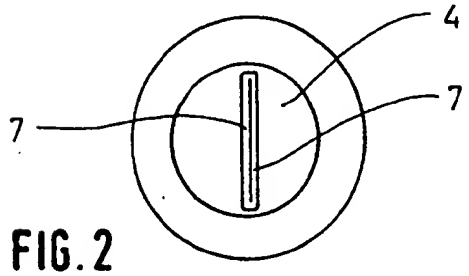

FIG. 2

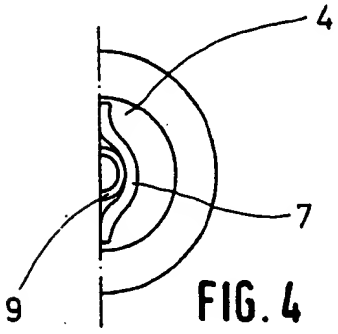

FIG. 4

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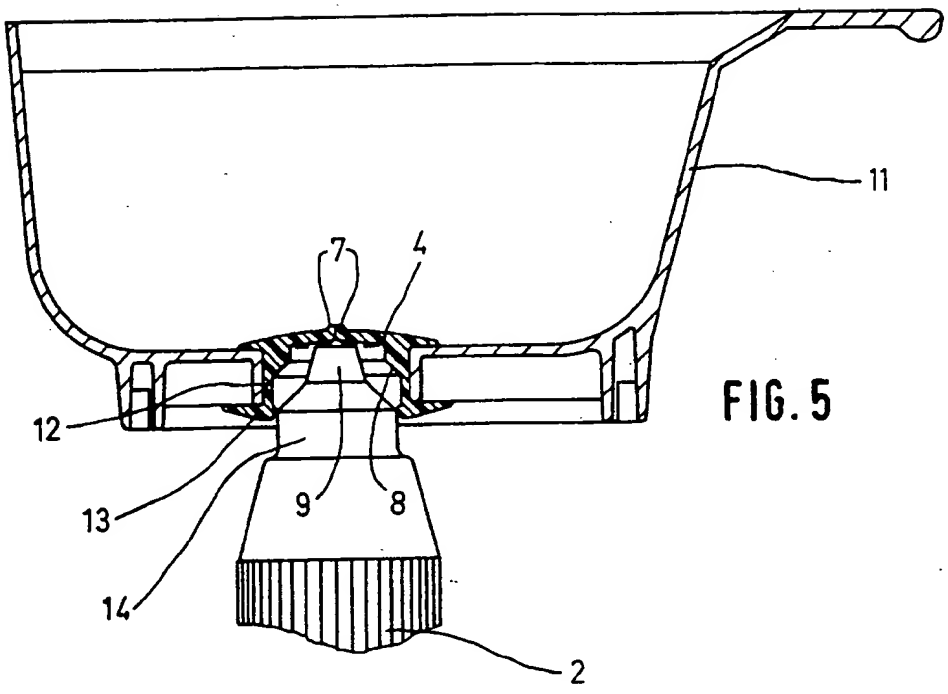

FIG. 5

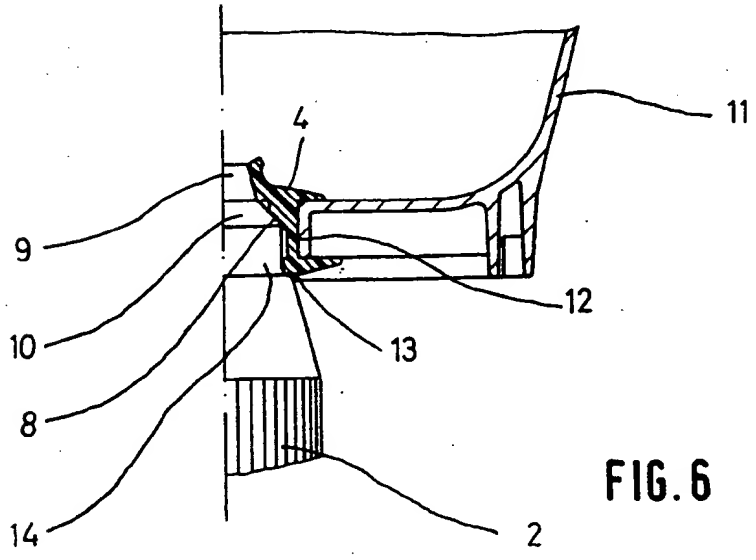

FIG. 6

SPECIFICATION

Self-closing Bottom Valve of a Receiving Container for Pasty or Fluid Substances

The invention relates to a self-closing bottom valve of a receiving container for pasty or fluid substances, into which valve an outlet nozzle of a storage container can be inserted.

Receiving containers comprising bottom valves of this type are, for example, mixing containers or metering containers for cosmetic preparations, such as hair dyes. When used in this way the substances to be mixed, for example the mixing components of hair dyes, are removed from a plurality of storage containers and introduced successively into a mixing container. The substances, some of which have a strong colouring effect or react chemically with one another or with the atmospheric oxygen, should be removed with as few losses as possible and introduced directly into the receiving container so as to avoid contamination.

A known bottom valve of the initially mentioned type (German specification 28 27 610) consists of a plurality of individual parts which are inserted as a structural assembly in a base opening of the receiving container. A closure member of the valve is pressed by a pressure spring against a closure opening and has to be lifted against the force of the spring in order to open the bottom valve. The substances to be supplied can penetrate *via* the closure member into the space containing the pressure spring. It is not possible to clean this valve interior completely, or only with a comparatively great amount of work, so that the danger arises of the remainder of the removed substances staying behind and these can either lead to contamination during a subsequent removal process or to impairment of the valve function. In addition, the production and assembly of the known bottom valve is relatively expensive since a plurality of parts has to be assembled.

What is desired is a bottom valve which is simple with respect to construction and function, yet closes reliably.

In accordance with the invention the bottom valve is a sealing lip valve which is formed in one piece from an elastomer and comprises two sealing lips which abut against one another along a center plane in the closed state, and in that an annular sealing seat is arranged below the sealing lips concentrically to the centre axis of the bottom valve.

The two sealing lips, which are rectilinear in the closed state, close under the resilient effect of the sealing lip valve, formed in one piece from an elastomer, without separate springs or similar parts being required. In the open state the sealing lips rest against the preferably annular nozzle of the storage container. The annular sealing seat, which is arranged below the sealing lips and is suited to the nozzle of the storage container, assumes an additional sealing function. The bottom valve combines the advantages of an annular sealing seat, which ensures a particularly good seal in cooperation with the inserted nozzle of the storage container, with the advantages of a sealing lip valve having straight sealing lips, which abut closely against one another in the closed state. The bottom valve is therefore suitable for connection with a nozzle having a relatively large diameter, without impairing its sealing effect in the closed state.

The production and assembly of the bottom valve are very simple since it is formed in one piece from rubber or a similar material and is simply inserted in a base opening of the receiving container.

Preferably the sealing lips project out of the surface of the bottom valve at their side facing the interior of the receiving container. As a result of this the line of contact of the sealing lips is in the upper region of the bottom valve; pressure exerted on the bottom valve by the substance received increases the closing effect of the bottom valve.

The annular sealing seat can comprise a sealing face which broadens towards the base, is frusto-conical, and is to cooperate with a corresponding frusto-conical sealing face on the nozzle of the storage container or with some other annular face on the nozzle.

The annular sealing seat may comprise an inwardly projecting annular sealing lip which can be brought into sealing engagement with a cylindrical outer face of the nozzle and is arranged axially at a distance from the part of the bottom valve bearing the sealing lips. This annular sealing lip ensures a particularly good seal with respect to the nozzle and is therefore preferably used when the substance to be received is highly fluid.

The invention will be described further, by way of example, with reference to the accompanying drawings, in which:

Figure 1 shows in side view and partially in longitudinal section a bottle-like receiving container which is provided with a bottom valve and is mounted on an outlet nozzle of a storage container;

Figure 2 is a section on line II—II in Figure 1;

Figure 3 shows a partial section similar to Figure 1, the bottom valve, however, being opened by the nozzle;

Figure 4 is a partial section on line IV—IV in Figure 3;

Figure 5 shows in longitudinal section a mixing container which is provided with a bottom valve and is mounted on an outlet nozzle of a storage container; and

Figure 6 is similar to Figure 5, the bottom valve, however, being opened by the nozzle.

Figure 1 shows a bottle-like receiving or metering container 1 which is to receive a fluid or pasty substance, for example a hair dye, from a storage container 2, only part of which is shown in Figure 1.

A bottom valve 4 is inserted in a base opening 3 of the receiving container 1; it embraces the edge of the base opening 3 with annular flanges 5

and 6 and is formed in one piece from rubber or a resilient plastics material.

The bottom valve 4 comprises two sealing lips 7 which abut against one another in the closed state (Figures 1 and 2) along a median plane. An annular frusto-conical sealing seat 8 is formed below the sealing lips 7 on the valve 4.

When the receiving container 1 is mounted on the storage container 2 the two sealing lips 7 are urged apart from one another by an outlet nozzle 9 of the container 2 so that the valve 4 is opened (Figures 3 and 4). In this connection a frusto-conical sealing face 10 on the nozzle 9 rests against the annular sealing seat 8 of the bottom valve 4 in a sealing manner, as is shown in Figure 3. In this state the pasty or fluid substance can be conveyed out of the storage container 2 into the receiving container 1, for example by a pressure being exerted on the nozzle 9 of the container 2 by the container 1, by means of which pressure the substance to be received is pumped upwards in the container 2.

As Figure 1 clearly shows, the sealing lips 7 project out of the surface of the valve 4 at the upper side facing the interior of the receiving container 1.

In the case of the embodiment illustrated in Figure 5 and 6 the receiving container 11 mounted on the storage container 2 is a mixing container which is to be mounted successively on a plurality of storage containers 2 in order to receive from them a plurality of mixing components for a hair dye.

As in the case of the embodiment previously described, the bottom valve 4 of the receiving container 1 comprises two sealing lips 7 which are rectilinear in the closed state, abut against one another in a sealing manner and can be opened by the nozzle 9 of the storage container 2. Also in this connection an annular, frusto-conical sealing seat 8 is provided below the sealing lips 7 and cooperates with a similarly frusto-conical sealing face 10 of the nozzle 9 when mounted on the container 2.

Differing from the previously described embodiment, the bottom valve illustrated in Figures 5 and 6, however, comprises a downwardly extending cylindrical section 12 which bears at its lower end an inwardly projecting annular sealing lip 13 which comes into sealing engagement with a cylindrical outer face 14 of the nozzle 9 before the upper end of the nozzle 9 opens the sealing lips 7. This state is shown in Figure 5. A complete seal between the annular sealing lip 13 and the cylindrical outer face 14 is already ensured in this manner before the nozzle 9 urges the sealing lips 7 apart and the bottom valve 4 opens. This embodiment is therefore particularly suitable for fluid substances.

CLAIMS

1. Self-closing bottom valve of a receiving container for pasty or fluid substances, into which an outlet nozzle of a storage container can be inserted, in which the bottom valve is a sealing lip valve formed in one piece from an elastomer, the valve comprising two sealing lips which abut against one another along a median plane in the closed state and an annular sealing seat below the sealing lips and concentric to the central axis of the valve.

2. A valve as claimed in claim 1, in which the sealing lips project from the surface of the valve at their side facing the interior of the receiving container.

3. A valve as claimed in claim 1 or 2, in which the annular sealing seat comprises a downwardly broadening frusto-conical sealing face.

4. A valve as claimed in any of claims 1 to 3, in which the annular sealing seat comprises an annular sealing lip.

5. A self-closing bottom valve of a receiving container, substantially as described with reference to, and as shown in, Figures 1 to 4 or Figures 5 and 6 of the accompanying drawings.

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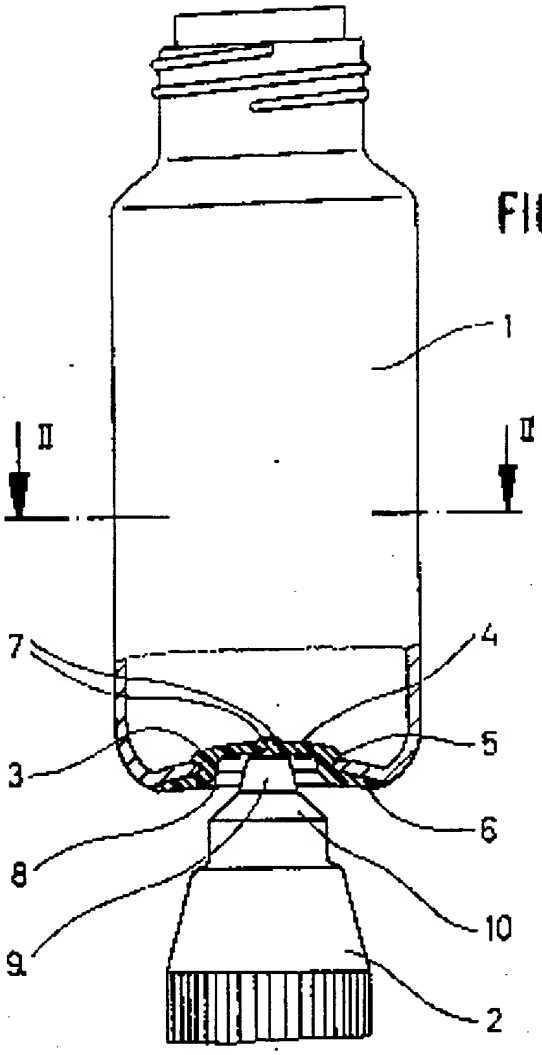

FIG.1

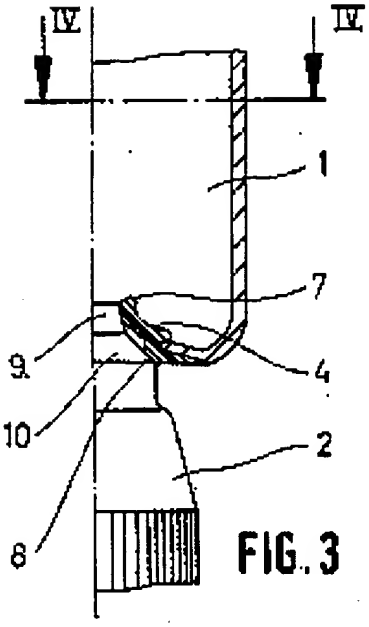

FIG.3

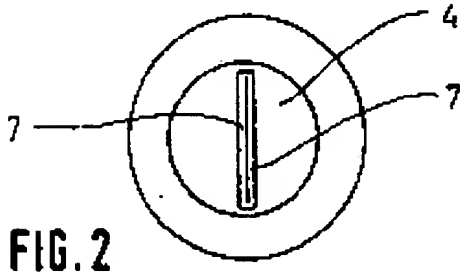

FIG.2

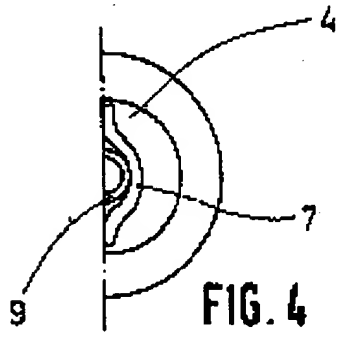

FIG.4

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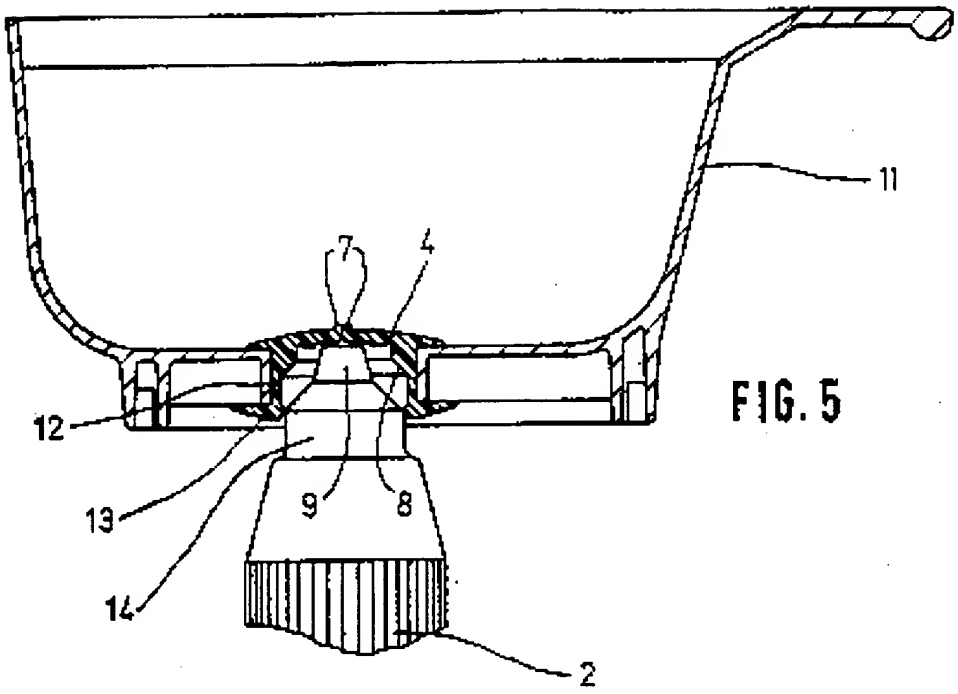

FIG. 5

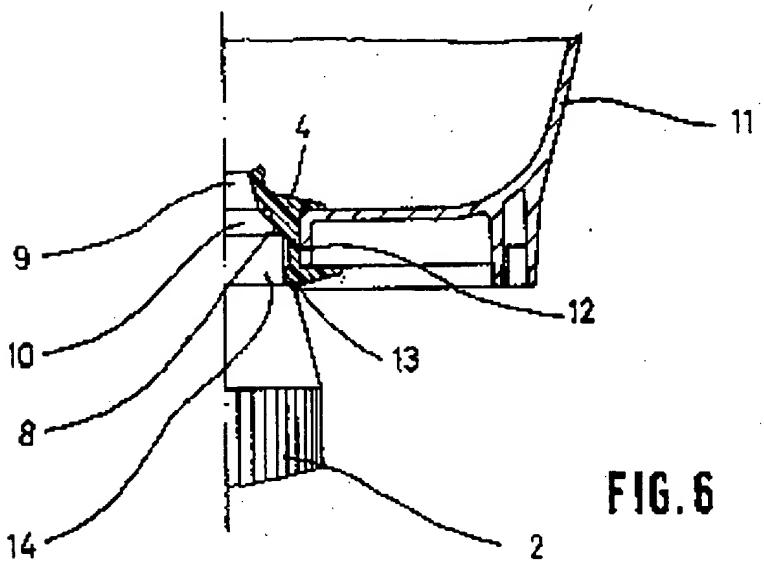

FIG. 6